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Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

1. (currently amended) A magnetic resonance imaging apparatus comprising an imaging means for applying high-frequency magnetic fields and gradient magnetic fields to an object ~~to be placed~~ in a static magnetic field, in accordance with a pulse sequence ~~[(of)]~~ for dynamic measurement for continuously obtaining a plurality of time-series images, and for measuring NMR signals emitted from the object ~~to-be-examined~~, a signal processing means for forming images of a desired tissue of the object, ~~to-be-examined~~ from the NMR signals, a display means for displaying the images and a control means for controlling the imaging means and the signal processing means;

wherein said imaging means is provided with a two-dimensional monitoring mode in which a desired slab of the object ~~to-be-examined~~ is measured using a pulse sequence for the dynamic measurement under a condition of applying gradient magnetic fields with a low spatial resolution, and is provided with a substantial three-dimensional measurement mode in which the same slab is measured using the same pulse sequence under a condition of applying gradient magnetic fields with a high spatial resolution, and

said control means ~~[[has a]]~~ includes mode switching means for switching from the two-dimensional monitoring mode to the substantial three-dimensional measurement mode and said switching means switches the two-dimensional monitoring mode to the substantial three-dimensional measurement mode with desired timing ~~during~~ when the two-dimensional monitoring mode is performed, and

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wherein the dynamic measurement performed by said imaging means is blood imaging for observing a change of blood flow using a contrast agent, where the slice encode is omitted in the two-dimensional monitoring mode to obtain two-dimensional images and the slice encode is added in the ~~monitoring~~ three-dimensional measurement mode to obtain three-dimensional images.

2. (original) The magnetic resonance imaging apparatus of claim 1,

wherein the apparatus is provided with means for extracting reference data from the dynamic measurement data acquired in the monitoring mode, and a temporal change of the extracted reference data is displayed on said displaying means.

3. (currently amended) The magnetic resonance imaging apparatus of claim 2,

wherein said mode switching means switches from the two-dimensional monitoring mode to the substantial three-dimensional measurement mode when the extracted reference data or the change of the reference data reaches a predetermined threshold value.

4. (original) The magnetic resonance imaging apparatus of claim 2 or claim 3,

wherein the reference data is, among the NMR signals acquired in the monitoring mode, a signal value of the origin of the k-space or an integration of data in the frequency encoding direction including the origin of the k-space.

5. (original) The magnetic resonance imaging apparatus of claim 2 or claim 3,

wherein the reference data is, among the NMR signals acquired in the monitoring mode,

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a difference of a signal value of the origin of the k-space or an integration of data in the frequency encoding direction including the origin of the k-space from the corresponding value acquired at the beginning of the monitoring mode.

6. (currently amended) The magnetic resonance imaging apparatus of claim 1, wherein said control means controls said signal processing means, when images are reconstructed immediately after the substantial three-dimensional measurement mode begins, so as to reconstruct images using data including data acquired in the pulse sequence performed previously.

7. (previously presented) The magnetic resonance imaging apparatus of claim 1, wherein data of the time-series images is three-dimensional data and transformed to a two-dimensional projected image to be displayed on said display means.

8. (currently amended) The magnetic resonance imaging apparatus of claim 1, wherein said mode switching means has an input means for mode switching, and the two-dimensional monitoring mode is switched to the substantial three-dimensional measurement mode by directly inputting a switching instruction to said mode switching means.

9. (currently amended) A magnetic resonance imaging apparatus comprising an imaging means for applying high-frequency magnetic fields and gradient magnetic fields to an object to be placed in a static magnetic field in accordance with a pulse sequence [[of]] for dynamic measurement for continuously obtaining a plurality of time-series images, and for

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measuring NMR signals emitted from the object ~~to-be-examined~~, [[as]] signal processing means for forming images of a desired tissue of the object ~~to-be-examined~~ from the NMR signals, a display means for displaying the images and a control means for controlling the imaging means and the signal processing means.

wherein said imaging means is provided with a two-dimensional monitoring mode in which a desired slab of the object ~~to-be-examined~~ is measured using a pulse sequence for the dynamic measurement under a condition of applying gradient magnetic fields with a low spatial resolution and a substantial three-dimensional measurement mode in which [[he]] the same slab is measured using the same pulse sequence under a condition of applying gradient magnetic fields with a high spatial resolution,

said control means has a mode switching means for switching [[tom]] from the two-dimensional monitoring mode to the substantial three-dimensional measurement mode and said switching means switches the two-dimensional monitoring mode to the substantial three-dimensional measurement mode with desired timing during the two-dimensional monitoring mode is performed, and

the gradient magnetic fields include a slice encode, a phase encode and a frequency encode for the two-dimensional or three dimensional measurement, and under the condition of applying gradient magnetic fields with low spatial resolution in the two-dimensional monitoring mode one of the slice encode and the phase encode is omitted and under the condition of applying gradient magnetic fields with high spatial resolution in the three-dimensional measurement mode both of the slice encode and the phase encode is imparted.

Claim 10 (canceled).

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11. (original) The magnetic resonance imaging apparatus of claim 9,
wherein a difference image between the blood images acquired before and after injection
of the contrast agent is displayed on said displaying means.

12. (currently amended) The magnetic resonance imaging apparatus of claim 2, wherein
said mode switching means switches the two-dimensional monitoring mode to the substantial
three-dimensional measurement mode when the extracted reference data or the change of the
reference data exceeds a predetermined threshold value.

13. (currently amended) The magnetic resonance imaging apparatus of claim 2, wherein
said mode switching means finishes the substantial three-dimensional measurement mode
when the extracted reference data or the change of the reference data reaches a predetermined
threshold value.

14. (new) The magnetic resonance imaging apparatus of claim 1,
wherein the control means sends an instruction to the mode switching means to indicate
starting time of the three-dimensional measurement mode based on signal intensity of data
acquired when the pulse sequence is applied without slice encode.